

METEOROLOGY FOR JULY, 1864.

PRIVATE OBSERVATORY, HOBART TOWN.

| Year. | Barometer reduced to standard temperature, 32 degrees. | Mean Temperature of the Air. | Maxima Thermometer Readings. | Minima Thermometer Readings. | Mean daily range of temperature. | Degree of humidity, 100 complete saturation. | Extent of cloudy sky 10 for sky covered. | Mean amount of ozone 10 for maxima. | Total amount of Rain. |
|-------|--|---------------------------------|---------------------------------|---------------------------------|-------------------------------------|---|---|--|--------------------------|
| | In. | ° | ° | ° | ° | | | | In. |
| 1841 | 30.005 | 42.57 | 57.2 | 30.5 | 14.6 | .84 | 4 | — | 1.01 |
| 1842 | 29.695 | 45.09 | 54.3 | 31.3 | 9.1 | .81 | 5 | — | 3.46 |
| 1843 | 29.679 | 44.21 | 56.8 | 31.2 | 10.7 | .91 | 6½ | — | 2.97 |
| 1844 | 29.857 | 43.11 | 56.2 | 31.8 | 13.4 | .91 | 4½ | — | 2.12 |
| 1845 | 29.866 | 45.44 | 61.6 | 31.5 | 14.0 | .84 | 3¾ | — | 0.72 |
| 1846 | 29.887 | 42.82 | 59.4 | 30.7 | 10.2 | .89 | 5¾ | — | 2.20 |
| 1847 | 29.488 | 43.94 | 56.4 | 32.3 | 13.8 | .89 | 6 | — | 1.73 |
| 1848 | 30.003 | 42.84 | 54.3 | 31.3 | 13.0 | .85 | 6 | — | 2.43 |
| 1849 | 29.877 | 43.51 | 53.8 | 32.2 | 8.7 | .88 | 6½ | — | 5.99 |
| 1850 | 30.113 | 44.89 | 58.8 | 29.8 | 16.0 | .84 | 4¾ | — | 0.30 |
| 1851 | 29.681 | 45.60 | 56.8 | 34.3 | 12.2 | .86 | 5¾ | — | 1.17 |
| 1852 | 29.684 | 44.75 | 54.7 | 31.3 | 12.4 | .86 | 5¾ | — | 3.14 |
| 1853 | 29.719 | 45.54 | 59.8 | 30.3 | 13.1 | .81 | 5½ | — | 0.67 |
| 1854 | 29.851 | 44.87 | 58.1 | 31.0 | 12.6 | .86 | 5½ | — | 0.33 |
| 1855 | 29.605 | 49.00 | 67.0 | 31.0 | 13.24 | .81 | 5.60 | — | 1.42 |
| 1856 | 29.726 | 46.60 | 69.0 | 31.0 | 20.77 | .76 | 5.00 | — | 1.89 |
| 1857 | 29.998 | 47.27 | 70.0 | 34.0 | 20.35 | .79 | 5.63 | 5.67 | 1.00 |
| 1858 | 29.913 | 48.45 | 67.0 | 30.0 | 19.67 | .72 | 3.66 | 7.61 | 1.75 |
| 1859 | 29.985 | 46.29 | 65.0 | 32.0 | 17.32 | .80 | 5.86 | 6.66 | 2.09 |
| 1860 | 30.193 | 46.93 | 67.0 | 30.0 | 18.48 | .82 | 5.46 | 5.79 | 0.48 |
| 1861 | 29.868 | 47.83 | 65.0 | 34.0 | 16.41 | .82 | 5.94 | 7.13 | 1.84 |
| 1862 | 29.818 | 48.26 | 68.0 | 34.0 | 17.87 | .79 | 5.24 | 6.94 | 1.11 |
| 1863 | 29.787 | 47.01 | 70.0 | 32.0 | 17.38 | .80 | 6.11 | 8.14 | 5.62 |
| 1864 | 29.856 | 49.15 | 63.0 | 34.0 | 17.32 | .80 | 5.93 | 7.31 | 4.44 |

The means in all cases are taken from the sums of each column, and not from the maximum and minimum.

The twenty years' standard tables are used for obtaining the difference from the average.

Leafing, Flowering, and Fruiting of a few standard Plants in the Royal Society's Gardens during the month.

- 1st Arbutus unedo commencing to flower.
 4th Garrya elliptica commencing to flower.
 8th White mulberry commencing to break.
 9th Almond commencing to flower.
 23rd Crocus commencing to flower.
 30th Hyacinth (white) commencing to flower.

| | In. |
|--------------------------------------|--------|
| Barometer, highest, 2d. 7h. a.m..... | 30.369 |
| „ lowest, 25 sunset..... | 29.338 |
| „ mean for the month | 29.856 |
| Being 0.002 above the average. | ° |

| | |
|--------------------------------------|-------|
| Temperature, highest on the 2nd..... | 63.00 |
| „ lowest on the 28th | 34.00 |
| „ mean for the month | 49.15 |
| Being 3.33° above the average. | |

Rain fell on the 5th, 6th, 7th, 8th, 9th, 17th, 18th, 19th, 20th, 21st, 22nd, and 29th, to the amount of 4.44 inches, being 2.71 inches above the average.

Prevailing currents of wind N.W., N., and S.E.; greatest horizontal force S., N.W., and N.

Lightning on the 24th. Electricity below the average.

F. ABBOTT.

ANALYSIS OF THE OBSERVATORY RECORDS FOR JULY, 1864;
IN CONJUNCTION WITH THOSE OF BIRTHS, DEATHS, &c. By
E. SWARBRECK HALL.

The general character of the weather this month was abnormal and more deaths took place than in any July of the previous seven years, except that of 1860 when so many old people were carried off by influenza.

Atmospheric pressure mean is, 29.856, and so nearly that of the 20 years' standard average, that it only differs by being below it two thousandths of an inch. The maximum pressure was, 30.369, on the 2nd; and the minimum, 29.338, on the 25th, consequently the range of the month was, 1.031 inches. The greatest movement of the barometer on any day, was a fall of, —.447 of an inch on the 17th, with a strong south wind and heavy fall of rain. The greatest rise was +.415 of an inch on the 27th. On eleven other days there were movements exceeding one-fifth of an inch. In July 1863, while the extreme range of the month and the daily perturbations were much the same as in the present month, the month's mean pressure was considerably less.

The total *wind-force* was 31.21 lbs., which is—7.42 lbs., less than the average of the previous seven years. July 1863 had 93 lbs.—*south* and *south east* winds were the only ones which had an excess both in frequency and force. This occurred with the heavy rains from the 16th to the 19th of the month. At the evening observation on the 17th, the wind pressure was 5.21 lbs., to the square foot, being the maximum of the month. At four other observations within this period, 2.60 lbs., pressure was recorded, and this amount was only once registered during any other day of the month. *North-west* winds were more than usually frequent, 48 out of the 93 observations, but they were so faint, that the whole pressure was less than the average. *North, North-east, East, South-west, and West*, were all below the average both in frequency and force. There were 47 calms noted, being + 7 more than the average for July. Last year's July had only 24 calms.

Temperature mean was, 49.15 degrees, being + 3.33 degrees above the 20 years' mean, and warmer than any July on record. By the self-registering maxima and minima thermometers, the mean was 49.82 degrees, being an unusually close approximation, to that by the three daily observations. The extremes of temperature recorded were, 63 on the 2nd, and 34 on the 28th. So small a range had not occurred for nine years previously. In July last year the extremes were 70 and 32.

The *daily-range* mean was, 17.32 degrees, being + 1.97 above the 20 years' mean, and yet almost identical with that of July 1863. The greatest range on any day was, 26 degrees on the 2nd; and the smallest was, 5 degrees on the 18th and 19th, during the heavy rains. The mild and equable temperature prevailing, while so much rain came with strong winds from southerly points of the compass, is most remarkable. From the evening of the 15th until the evening of the 20th every one of the three daily records noted the wind from some southerly point, yet the mean temperature of these six days, exceeded the mean temperature of the month, being nearly 51 degrees.

Solar-intensity ranged from 92 maximum on the 22nd, to 54 minimum on the 17th. The mean was, 77.74 degrees, being + 2.69 degrees higher than the average of the previous 8 years, and above any of them except 1855. In 1863 the mean was — 5.78 degrees less than the present month. The cloud mean being, moreover, above the 20 years' average, makes the sun's rays, while prevailing, so much the hotter.

Terrestrial-radiation mean was, 37.35 degrees, which is + 2.22 degrees above the average of the previous eight years and higher than any one of them. The maximum was 49 degrees on the 19th; and the minimum 30 degrees on the 26th and 28th. The latter was higher than any minima of the previous eight years. The extremes in July 1863, were 45.4 and 27 degrees.

Rain-fall amounted to 4.44 inches, being + 2.71 inches more than the 20 years' mean. Two July's only in the previous 23 years had more than this, i.e., last year:—5.62 inches, and 1849—5.99 inches. However, in the present month my rain gauge record is, 5.42 inches,—or nearly an inch more than fell in the centre of the city, as registered at Mr. Abbott's observatory. The rain was registered on 12 days, which is rather more than two less than the average of the previous nine years—1863 had 19; 1862—18, and 1861—20 days wet. Moreover the rain this month fell nearly altogether on five days, i.e.:—the 8th, 17th, 18th, 19th and 20th. For the other seven days altogether, only, .19 of an inch is registered; mere sprinkles on any day. From 10 p.m. on the 16th, to 10 p.m. on the 17th, I measured from my rain-gauge 3.40 inches, and in the next twenty-fours .90 of an inch. Floods prevailed throughout the island, and the Hobarton rivulet and drains had a thorough cleansing.

Snow was never absent from Mount Wellington during the month, under-

going both reductions and additions, and on the last day of the month, but one small patch was visible from the city.

Humidity mean, 80, is exactly the same that 1863 had, being— $2\frac{1}{2}$ below the 20 years' average for July.

Elastic-force of Vapor mean, 282, is + 23 above the 20 years' mean, and + 27 more than 1863 had. The maximum of the month was 4.03 at noon on the 20th, and the minimum 193 was recorded at 7 a.m. on the 3rd, 13th and 27th. The present month has the highest mean of 24 years. The next was the sickly July of 1855.

Spontaneous Evaporation. Though much less than rain-fall on the whole month, exceeded it greatly for every part of the month except the four days 17th to 20th.

Cloud mean, 5.93, is + .66 above the 20 years' mean.

Ozone mean, 7.31, is + .46 above the mean of the previous seven years.

Electricity had 6 positive indications with maximum tension of 5.5; Negative had 42, with maximum tension of 5.0;—and there were 14 observations when "nil" was recorded. Sheet lightning was very prevalent on the evening of the 24th.

70 deaths this month is a very high mortality, in fact, in the previous seven years, only July 1860 (when 44 deaths occurred, mostly from epidemic influenza and its sequences, in very aged and infirm persons) had a higher rate. In 1861 when measles carried off so many young children, the deaths were even 11 less than the present month:—

| July, 1864. | Ages. | Juls. | | | | | | | | Avg. 7 yrs Juls 1857-1863. |
|-------------|--------------|-------------|------|---------------|------|--------------|------|------|------|----------------------------------|
| | | June, 1864. | 1863 | Min. 1862. | 1861 | Max. 1860 | 1859 | 1858 | 1857 | |
| 16 | Under 1 | 14 | 6 | 3 | 10 | 8 | 7 | 7 | 16 | 8 1-7 |
| 4 | 1 to 5 | 10 | 5 | 8 | 13 | 9 | 9 | 9 | 6 | 8 3-7 |
| 7 | 5 to 20 | 4 | 3 | 2 | 10 | 4 | 2 | 0 | 1 | 3 1-7 |
| 13 | 20 to 45 | 7 | 10 | 9 | 13 | 22 | 8 | 11 | 20 | 13 2-7 |
| 18 | 45 to 60 | 9 | 14 | 11 | 3 | 22 | 5 | 8 | 4 | 9 4-7 |
| 12 | 60 and above | 10 | 10 | 3 | 10 | 49 | 8 | 6 | 5 | 13 |
| 70 | | 54 | 48 | 36 | 59 | 114 | 39 | 41 | 52 | 55 4-7 |

Under one year of age the deaths were nearly double the average of the seven years, and were only equalled by 1857. At 1 to 5, however, the mortality was less than one-half the seven years' average, and not one of the seven had so few. At 5 to 20, again, there were nearly double the average number of deaths, and 1861 alone had a greater number—At 20 to 45 the numbers were a trifle less than the average, 1861 having the like number, three out of the seven years having less, and the other three more. At 45 to 60, the deaths were not much short of being twice as many as the seven years' average, only 1860 having a greater number. At all ages above 60, the deaths were one less than the average, but 1860 greatly exceeded it. Were that year's July excluded from the calculation, the present month's deaths would be very nearly double the six years' average, which is only 7. Moreover, all this year's deaths were above 65 years of age, the oldest, an invalid male at the Brickfields, being 92 years old.

| July, 1864. | Classes of Disease. | Juls. | | | | | | | | Avg. 7 yrs Juls 1857-1863. |
|-------------|---------------------|-------------|------|--------------|------|--------------|------|------|------|----------------------------------|
| | | June, 1864. | 1863 | Min. 1862 | 1861 | Max. 1860 | 1859 | 1858 | 1857 | |
| 0 | 1 Zymotic | 5 | 3 | 8 | 19 | 38 | 4 | 6 | 6 | 12 |
| 13 | 2 Constitutional | 6 | 7 | 7 | 6 | 10 | 8 | 7 | 9 | 7 5-7 |
| 42 | 3 Local | 33 | 29 | 16 | 21 | 44 | 20 | 24 | 26 | 25 5-7 |
| 11 | 4 Developmental | 6 | 9 | 1 | 5 | 11 | 3 | 2 | 5 | 5 1-7 |
| 4 | 5 Violent | 4 | 0 | 4 | 8 | 11 | 4 | 2 | 6 | 5 |
| 70 | | 54 | 48 | 36 | 59 | 114 | 39 | 41 | 52 | 55 4-7 |

The 19 Zymotic deaths in 1861 were, Measles 9, Croup 4, Diphtheria 2, Scarlatina 1, Diarrhoea 2, Rheumatic Fever 1.

The 38 *Zymotic* deaths in 1860 were :—Influenza 30, Croup 6, Diarrhœa 1, Fever 1.

Of the 44 *local* deaths in 1860, 18 were from Pneumonia.

Of the 11 *Developmental* deaths in 1860, 8 were from old age.

The *Zymotic* class of diseases had not one death this month, being the first time in eight years, this class has had a blank return. This alone would show, what a high degree of atmospheric purity prevailed in July, and the Ozone returns confirm the fact. The excess of the latter, however, has been injurious in the opposite direction, by its stimulating effects on the circulatory and respiratory organs. The *constitutional* class of disease, caused a very great number of deaths, comparatively, being not many short of double the seven years' average. All were diseases of long standing, 4 being cancerous affections in persons from 51 to 65 years of age—9 were cases of consumption, being the highest number ever recorded in any month during the previous seven and a half years. Four of the number were young Tasmanians. The *local* class of diseases had many deaths beyond the seven years' average. Of these the *Nervous system* had 9; the *Circulatory system* 5; the *Respiratory system* 22, mostly acute inflammations, consequent upon the prevailing catarrh; the *Digestive system* 4; the *Urinary system* 1; the order of bones, joints, &c., 1. The *Developmental* class of diseases had rather more than double the seven years' average, but six of the number were aged from 76 to 92 years. The class of *Accidental* and *Violent* deaths and diseases, had one less than the average. One was burnt to death in his hut; one was found drowned; the third was killed by a mass of stone falling upon him in a quarry; the fourth died from the effects of a bite from a boar on the thigh. Though five months of the year in succession have had an excess of deaths, over the seven years' average, yet the first two months, usually so fatal in Tasmania had so much below the average, that the first half of the year had actually five less deaths than the first half of 1863 had. It is gratifying to record, that while death has been rife in the community at large in this registration-district, the Queen's Asylum, with an average of nearly 550 children, has not had a single death. The last death recorded for this Institution was in June 1863 in the male division, a boy aged 11 years, whose death had long been expected as he had been a sufferer from Epilepsy for many years. In the infant division the last death took place in January 1863, in a child $4\frac{1}{2}$ years old, who died from the mechanical rupture of air the cells of the lungs, while laboring under a paroxysm of Whooping-cough. In the girls' division the last death occurred nearly three years since.

The *Inquests* this month were 4, July 1863 had 3. The deaths in the public *Hospital* were 24, three being cases received from country districts, and one from a vessel in harbor. At the *Male Invalid Asylum* 2 deaths took place, 1863 had 4. Of the 70 deaths, 3 occurred in the Glenorchy, 2 in the Queenborough districts, the rest in the city—40 were males 30 females.

On the 8th, 14th, 19th, 20th, and 30th, no deaths took place. The greatest number on any two consecutive days was 10, on the 17th and 18th, when the barometer fell suddenly, with strong southerly winds and heavy rain; but it is note-worthy, that on the two following days (rain and wind from the south still prevailing) no deaths took place, and only one each on the two succeeding days. The most fatal period of the month was the four days 15th to 18th, which ushered in and commenced the heavy rains, when 17 deaths occurred; no other four days in the month had more than eleven. The weekly totals of deaths were pretty uniform; the first having 19; the second 15; the third, 18; the fourth, 16; and the last three days 2.

The registered *births* were 68, being + 3 more than July 1863 had.

